

material is explained below.

[0345]

When impact applying unit 1 is allowed to fall onto sheet material P and is rebounded therefrom, the output signal (201 in FIG. 37A) from piezoelectric element 2 is sent to comparator circuit block 3. On the other hand, to the comparator circuit block 3, a predetermined initial threshold (fixed value) is inputted from threshold-changing circuit block 4. From comparator circuit block 3, a pulse is inputted (only when the outputted signal from the piezoelectric element exceeds threshold V_v) to peak counter circuit block 50 (FIG. 57B). This threshold V_v is changed to a lower threshold V_t after the initial high threshold V_k is kept for a certain time as shown in FIG. 57A. Therefore, the first peak and the second peak are compared with the higher threshold V_k , and the third and subsequent peaks are compared with the lower threshold V_t . Thereby a pulse is outputted at every collision of impact applying unit 1 against sheet material P. Even if the output signal from piezoelectric element 2 has the waveform shown by reference numeral 202 in FIG. 59A, pulses are outputted.

[0346]

The binary pulse obtained by the comparator is counted by peak counter circuit block 50, and the count number is outputted (^{FIG. 56A}~~FIG. 57C and 57C~~). Time counter circuit block 51 starts the counting from a predetermined